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Lawrence Livermore National Laboratory (LLNL) Overview

Mark Martinez
Principal Associate Director
Operations and Business Principal Directorate

Lawrence Livermore National Laboratory

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LLNL is a multidisciplinary national security laboratory

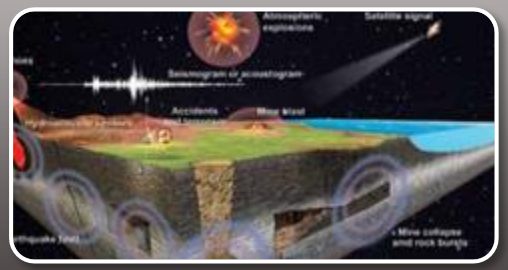
Experimental Test Site
(11 miles^2 near Tracy, CA)

- Established in 1952
- Approximately 5,800 employees
- 7.1 million gross square feet, 684 facilities
- Annual federal budget: ~ $1.42B

Solving global security challenges for the nation

Multidisciplinary science, technology, and engineering

Nuclear Security

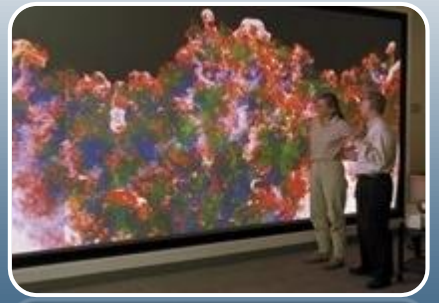


International and Domestic Security

Energy and Environmental Security

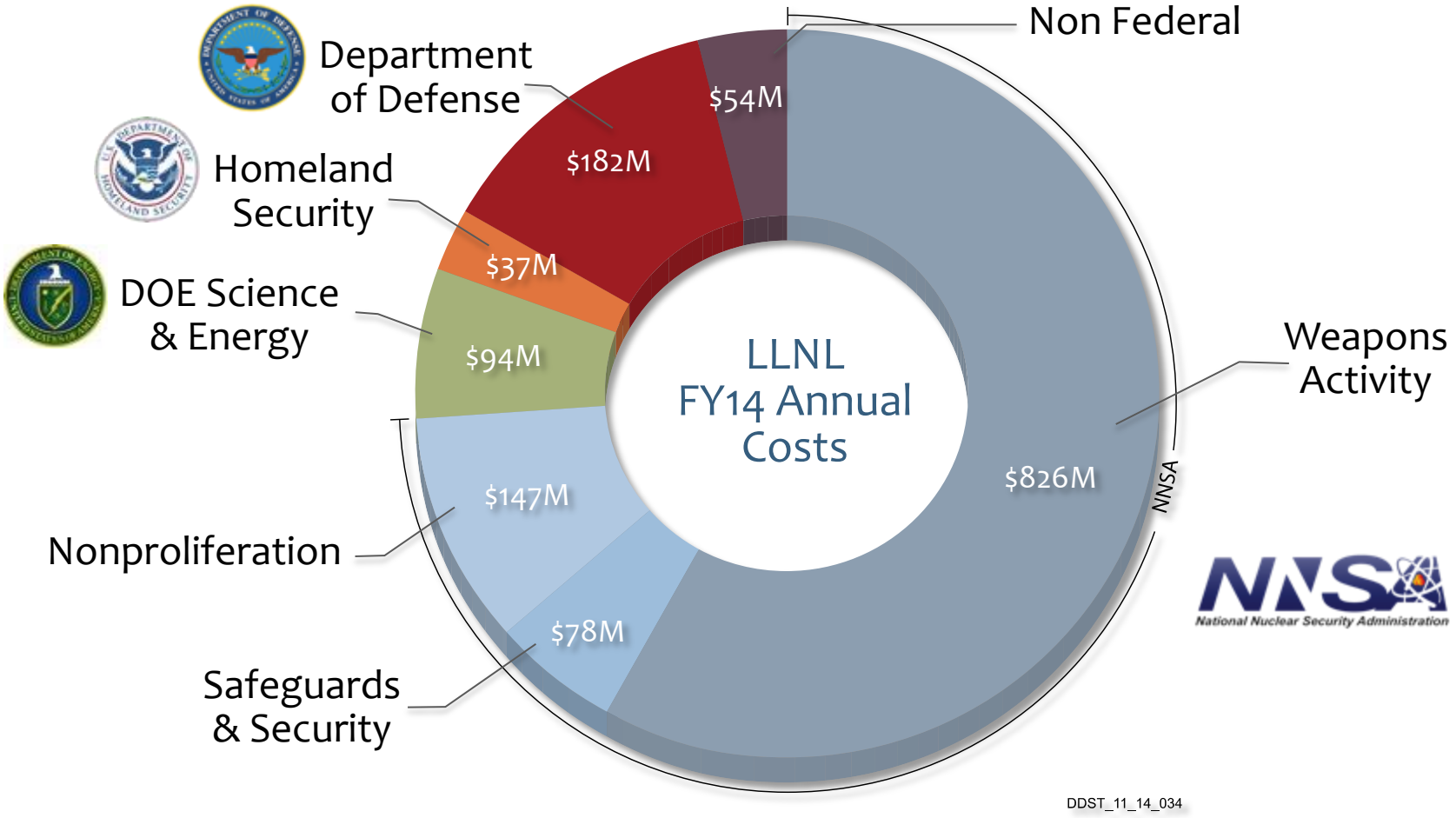
Applied Science

Engineering



Computing

Lab's ~$1.42B program reflects its national security focus



The Laboratory's scientific and technical capability is supported principally by DOE/NNSA.

Nuclear security
and the Stockpile Stewardship Program

- Assess annually the safety, security, and reliability of the stockpile
- Extend life of stockpile warheads; adapting safety and security features to evolving requirements
- Resolve remaining weapons physics grand challenges
- Nuclear nonproliferation and counterterrorism

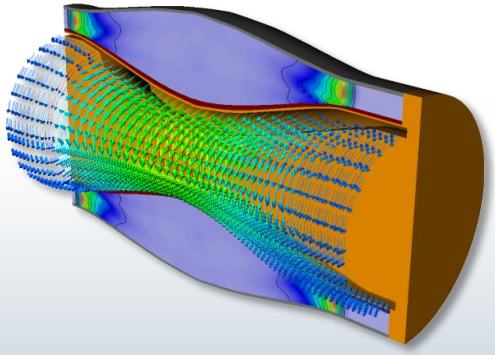
The Stockpile Stewardship Program has successfully maintained the nuclear deterrent without explosive nuclear testing since 1992.

Supporting the stockpile stewardship mission with unique S&T capabilities and R&D facilities

Applied Science

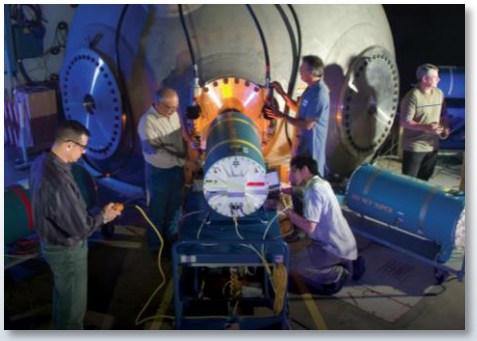
- Energetic materials
- Actinide science
- Materials under extreme conditions

High-Performance Computing



- Verified and validated models of complex systems
- High-fidelity multi-physics simulations

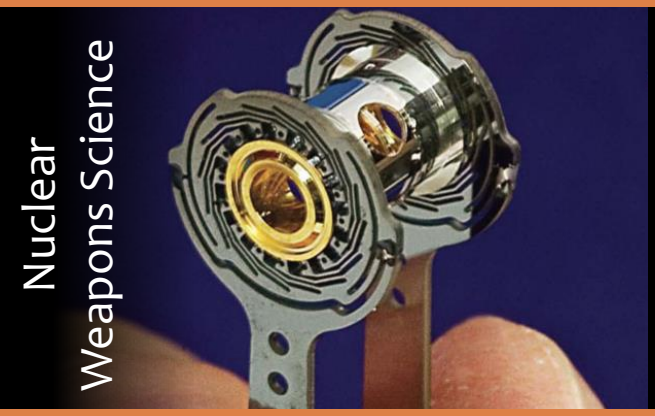
Unique Experimental Facilities

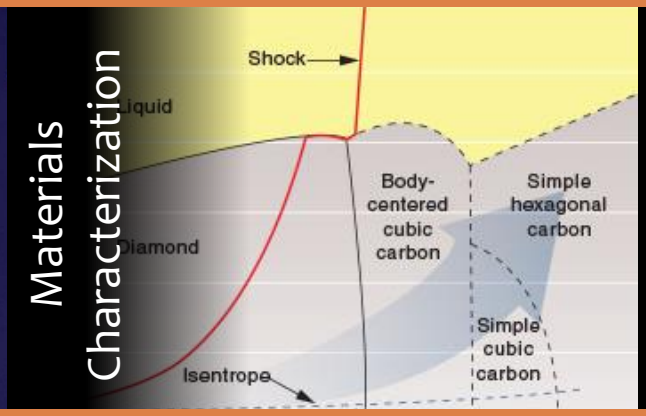


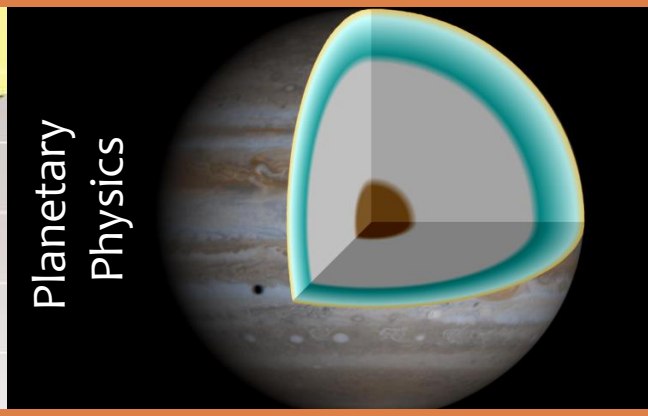
- High Explosives Applications Facility
- Site 300
- National Ignition Facility

NIF was designed and built as a premier stockpile stewardship tool

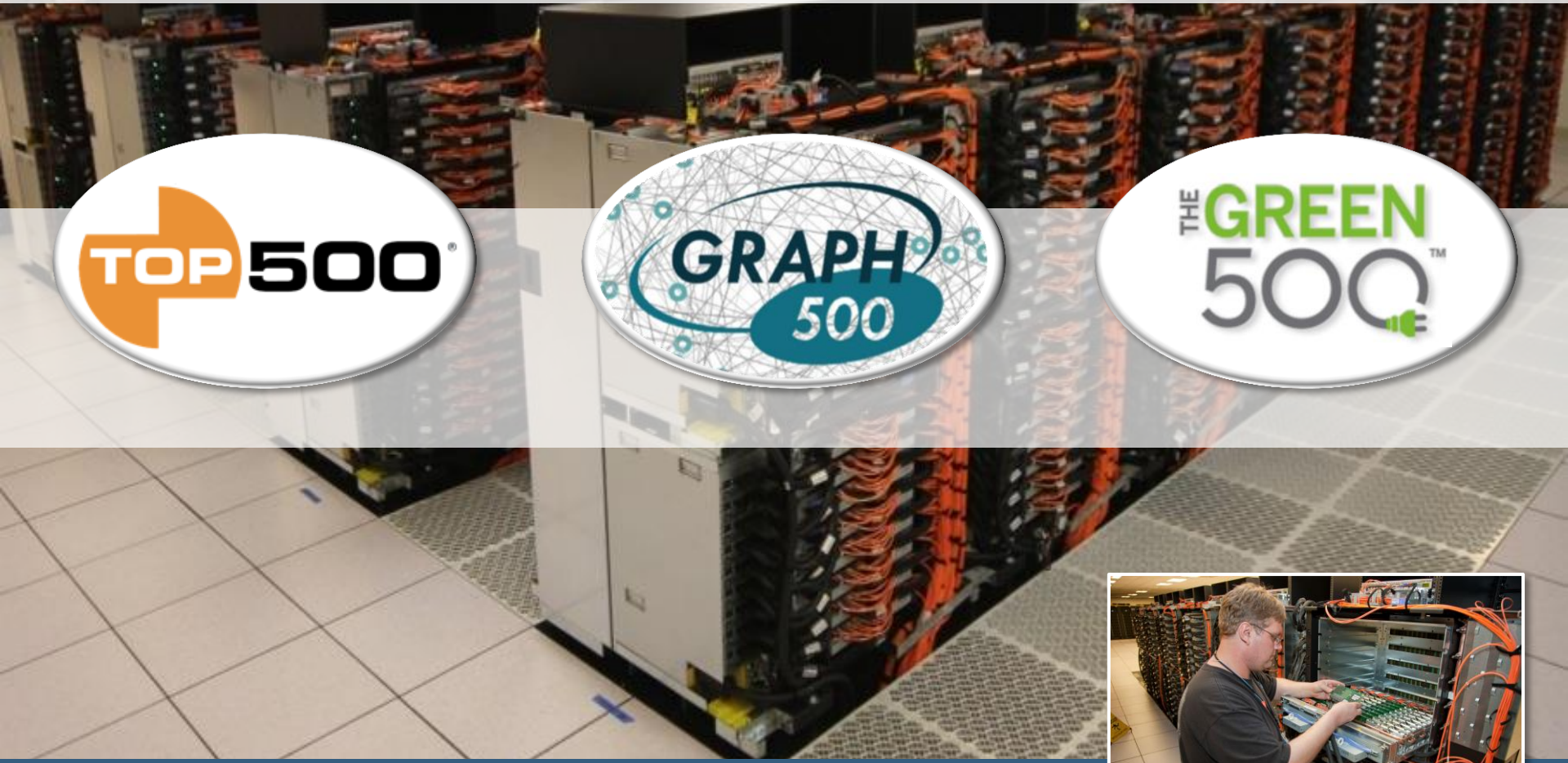
NIF explores regions of energy, temperature, and pressure that occur only in nuclear weapons and the interior of stars







High-Performance Computing (HPC) is part of the Laboratory's DNA



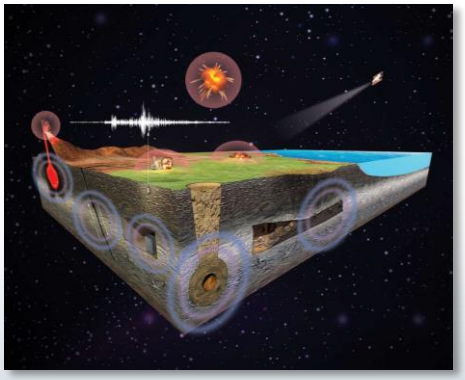
Throughout its history, LLNL has been at the forefront of enabling both the hardware and software of HPC.

Nuclear security is more than nuclear weapons

Non-proliferation

- Verification monitoring
- Sampling and analysis
- Safety and security of special nuclear material

Treaty monitoring



- Monitoring and detection for nuclear test ban treaty agreements
- Analysis and characterization of nuclear tests

Counterterrorism

- Forensics
- Detection and diagnostics
- Incident response

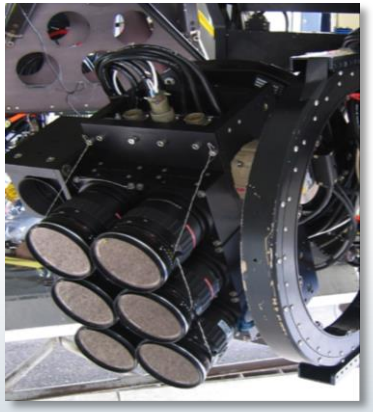
Domestic and International Security

Focused on defending against asymmetric threats

Chemical/Biological Counterterrorism Program

- Rapid detection and characterization of emerging and unknown threats
- Rapid development of new medical countermeasures
- Threat assessment and risk analysis

Intelligence



- Persistent surveillance
- Space situational awareness
- End-to-end exploitation
- Integrated WMD analysis

Explosives Security

- Explosive detection development
- Aviation security
- Infrastructure protection

Cyber Security

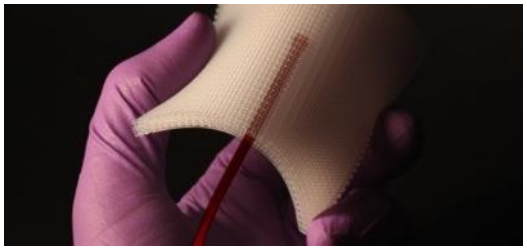
- Network mapping
- Behavioral-based situational awareness
- Predictive analysis of actions and effects

S&T Core Competencies

Nuclear Security | Other National Security

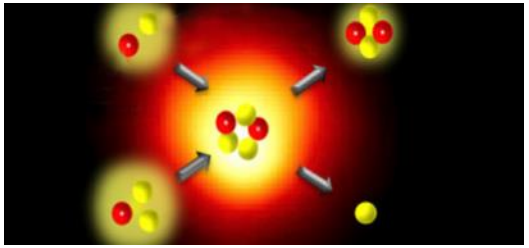
High-Energy-Density Science

Advanced Materials and Manufacturing



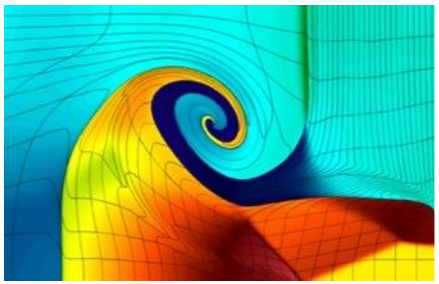
Chemical and Biological Security

Nuclear, Chemical, and Isotopic S&T

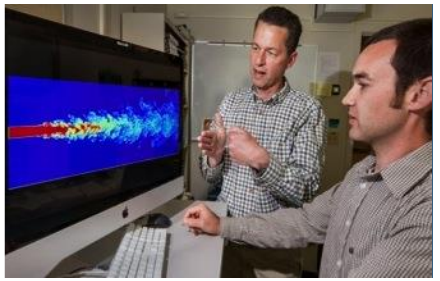


Lasers Science

Earth and Atmospheric Science



High-Performance Computing, Simulation, and Data Science



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Science and Technology on a Mission